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Contribution of the Geographic Research Area, ORR, to

NIE 11-6-59

SOVIET SCIENCE AND TECHNOLOGY

The Role of Geography in Soviet Science and Technology

CIA/RR G/I 59-23b.

(ORR Project 60.1761)

20 March 1959

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The Role of Geography in Soviet Science and Technology

A. Soviet Foreign Policy (Section I-B)

Soviet geographic research on foreign countries is directed towards basic studies of the various countries of the world in which all phases of geography are included regardless of immediate strategic value. Such studies are producing an increasingly important basis for the development and implementation of foreign policy.

The geographic sections of all leading Soviet universities and research institutes emphasize the study of foreign countries. In the Geographic Faculty of Moscow University, for example, 3 of the 14 departments are devoted to teaching the geography of other countries, a fourth to polar geography, and a fifth to oceanography. In the Institute of Geography of the Academy of Sciences, 2 of the 10 sections are concerned exclusively with foreign countries, preparing both country monographs and special studies. Two other institutes in the Academy of Sciences are engaged in extensive research on areas outside the Soviet Union. The Institute of Oceanography (together with related organizations) conducts research on all the oceans of the world and in at least 17 foreign countries. The Institute of Oriental Studies includes among its other work important geographical research.

Soviet publications reflect the increasing world-wide interests of the Soviet Union. Of particular significance is the growing volume of publications on Southeast Asia, the Near East, and Africa. Publications range from short, generalized, popular descriptions of an entire country to detailed studies of specific branches of the economy and exhaustive studies of the peoples. All are of basic value in planning economic, cultural, and political penetration. In 1958 alone, more than one-third

of the space in the two leading Soviet geographic journals was devoted to countries other than the USSR; and a single monthly issue of Referativnyy Zhurnal, Geografiya (Feb 59) included at least 67 references to books and articles on foreign countries written by Soviet geographers.

Soviet geographers have also greatly increased their participation in international organizations and conferences. In one year alone, they were represented at the Ninth Pacific Science Congress, the Regional Conference on the Geography of Asia, and the Second Meeting of Economic Geographers of Eastern Europe, and at major conferences on national atlases, ornithology, the climate of arid zones, Afro-Asian geography, Arctic sea ice, and geodesy and geophysics. Some 300 Soviet geographers plan to attend the Nineteenth Congress of the International Geographic Union in 1960. These activities are evidence of a concerted effort to overcome a significant weakness on the part of Soviet geographers -- inadequate first-hand knowledge of foreign countries.

B. Soviet Scientific and Technological Resources (Section II-A)

1. Native Soviet Resources: Scientific Education and Training (II-A-3)

In the field of geography, university training emphasizes basic topical disciplines (soils, cartography, economic geography) and their practical application, including an excellent summer field-work program in which students participate in research expeditions. The result is a constant flow of well-trained geographers into schools, research institutions, and government agencies, thus providing a reservoir of workers who have detailed regional knowledge and are trained in the Soviet concepts of regional economic development. To a large extent the geography curricula of the universities are determined by the state, and research is performed on contract for various government agencies.

The geographic research effort is impressive both in its material aspects -- large staffs, budgets, and facilities -- and in the scope and nature of the program. An analysis of contemporary Soviet publications and maps, and evaluations by competent western geographers who have visited the country and its research centers in recent years have demonstrated that geographic training and research in the Soviet Union today are outstanding in quantity and quality as well as in scope of interest.

2. Exploitation of Non-Soviet Resources (II-B)

Close working relations between Soviet geographers and those of China and the Satellite countries have resulted in a large number of joint expeditions and jointly prepared monographs. Geographic and cartographic work in all bloc countries, especially Communist China, reflect Soviet influence.

An important aspect of the geographic research is the exploitation of non-Soviet source materials through an elaborately organized bibliographical effort. The February 1959 edition of Referativnyy Zhurnal, Geografiya includes more than 1,400 citations dealing wholly and specifically with foreign countries gleaned from more than 600 geographic and nongeographic sources published throughout the world. A large proportion of the citations are accompanied by resumes, and full copies of all the cited material are available to any interested researcher.

C. Strategic Aspects of Scientific Research: Physical Sciences (Section III-1)

For the past two decades, an organized scientific Arctic research program has been conducted in which geographic research is coordinated with research in the numerous related fields of physical science. More recently, emphasis has shifted to the strategic aspects of the Arctic. In 1954 the Arctic Program of the Academy of Sciences was greatly expanded. More than 100 polar stations have now been established; numerous exploratory geologic and geodetic field parties are conducting research in the Arctic; some 20 oceanographic research vessels are in operation in late summer; and 2 drafting scientific stations are currently collecting geophysical data. As a result of scientific research, improved topographic, geologic, and geodetic maps of the mainland and hydrographic charts of the Arctic Seas have been produced. An early start in the amassing of scientific data gave the Soviet Union an advantage over all other countries, since collection is necessarily a slow process. Disciplines based on long-term observations -- such as meteorology, ice reconnaissance, and permafrost investigation -- have long been studied by the Soviets; and the vast amount of data that has been collected, processed, and published provides a solid background for current research.

The IGY provided an additional impetus to the collection of data not only on the Soviet Union but also on the rest of the world. Over 100 scientific organizations directed by the Academy of Sciences cooperated in this effort. In the Soviet Arctic, alone, about 60 scientific stations are now operating. The scope of the Arctic research in disciplines such as oceanography, glaciology, geomagnetism, ionospheric physics, and seismology is much more extensive than that of all other coutries bordering the Arctic combined.

During the next 5 to 10 years, scientific advances of significance to Arctic research can be expected. The collection of data will certainly be further automated, and greater amounts and new types of information be anticipated from both drifting and stationary automatic meteorologic stations. Atomic-powered icebreakers that can operate in pack ice will provide opportunities for extending the oceanographic research now performed by drifting stations and high-latitude air expeditions; and atomic submarines sailing under the sea ice will facilitate investigations of marine biology and physical, chemical, and dynamic oceanography, and studies of ocean-bottom composition.

D. Science and Technology Supporting the Soviet Economy and Industrial Development (Section IV)

1. Resource Development (IV-1)

The Soviet Union, more than any other country of the world, has capitalized on the results of geographic research in the development of its internal economy. All of this research is focused on the practical application of geography, chiefly the acceleration of economic development through efficient exploitation of the varied and widespread natural and human resources of the Soviet Union. Research of the Institute of Geography of the Academy of Sciences includes the fields of geomorphology, climatology, hydrology, biogeography, economic geography, cartography, and glaciology. The main effort of this research is concentrated on two problems -- maximum utilization of resources that are of current economic value and means for altering the natural environment to permit utilization of latent resources.

Of particular interest in this connection is the problem of regionalization. Recognizing that the 12 traditional economic-geographic regions which have served as the basis for national planning do not adequately serve current needs and goals, a complete realignment of economic-geographic regions is being studied. A Commission on Working out the Economic-Regions Grid of the USSR was active in the 1956-57 period, a number of special conferences have been held, and recommendations for changes are now being considered. These vary from the formation of 24 economic regions with some specialization and exchange of products (as approved by the Commission), to the division of the nation into 4 large regions that would be economically autonomous. A decision on a new alignment of regions may be expected within the next few years.

In the Arctic, continued geologic mapping and field exploration will probably reveal new mineral deposits. Their exploitation will bring more people to the Arctic, and new settlements will be established. In the new settlements, small nuclear powerplants and tidal electric stations will offer new sources of power. Field surveys and construction plans for tidal stations have already been completed for some areas within the European Arctic.

2. Transportation (IV-10)

The improved hydrographic charts and ice forecasting together with the use of atomic-powered icebreakers and freighters will increase the navigation season and freight capacity of the Northern Sea Route, the principal supply line in the Soviet Arctic.

E. Military Research and Development Capabilities: Key Supporting Fields (Section V-2)

Current Arctic research is directed largely towards strategic aspects of the area. The large mass of Arctic scientific data, backed up by years of practical experience in the region, combined with a permanent population has already placed the Soviet Union in a uniquely advantageous position in planning and conducting military operations involving under-ice navigation, polar guided-missile and aircraft flights, and related operations such as weather forecasting and control. With further scientific progress, their present preeminence can not only be maintained but also increased.